

# EUROPEAN PATENT OFFICE

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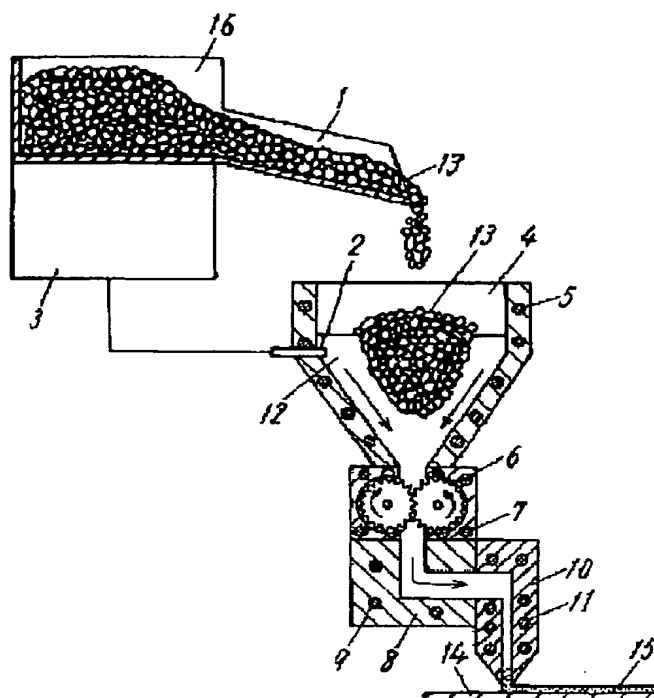
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TITLE : APPARATUS FOR APPLYING HOT  
MELT ADHESIVE



ABSTRACT : PROBLEM TO BE SOLVED: To provide an apparatus for applying a hot melt adhesive with scarce thermal deterioration which has a simple structure, in which a hot melt adhesive does not stay in a melting tank, and by which coating is carried out even in the case the melting temperature is kept at low temperature.

SOLUTION: An apparatus for applying a hot melt adhesive is constituted of a melting tank 4 for a hot melt adhesive 13 which is provided with a heating system, e.g. a heater 5, in the outer circumference, a pressure pump 6 which is provided with a heating system, e.g. a heater 7 connected with the bottom of the melting tank 4 with a reversed shape of a hanging bell, a joint part 8 which is provided with a heating system, e.g. a heater 9 connected with the pressure pump 6, and a nozzle 10 for spraying which continues from the joint part and is provided with a heater 11. Consequently, thermal deterioration of a hot melt adhesive can be lowered by a simple structure and giving stabilized quality, application of a hot melt adhesive can be carried out.

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**CLAIMS**

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[Claim(s)]

[Claim 1] The hot-melt-adhesive coater become from the nozzle for regurgitation which carries out the regurgitation about the reverse campanulate melting tank which fuses the feed zone which supplies hot melt adhesive, and the hot melt adhesive which was equipped with the heating device and supplied from the above-mentioned feed zone, the feeding pump which sends out the hot melt adhesive by which was equipped with the heating device, and was combined with the lower part of the above-mentioned melting tank, and melting was carried out, and the hot melt adhesive which was equipped with the heating device and fed from the above-mentioned feeding pump, and which fused

[Claim 2] The hot-melt-adhesive coater according to claim 1 which set up the temperature of each heating device so that each temperature of a melting tank, a feeding pump, and the fused hot melt adhesive in the interior of each [ of the nozzle for regurgitation ] might become the relation of the nozzle > feeding pump > melting tank for regurgitation.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention relates to the hot-melt-adhesive coater which applies hot melt adhesive to stability at a film sheet etc., in order to manufacture the laminated wood of the shape of tabular [ thin ] or film etc.

**[0002]**

**[Description of the Prior Art]** As this kind of hot-melt-adhesive coater is conventionally shown in the elevation partly in section of drawing 2 Hot melt adhesive 21 is completely fused by the periphery section 22 which equipped the interior with the heater 24, and the square shape melting tank 23 which heats hot melt adhesive 21 through the fin 25 which prepared in the inner bottom. The incubation hose 18 is minded for melting hot melt adhesive 21 from the bottom of the square shape melting tank 23 with the pump 17 for feeding of the hot melt adhesive 21 which consists of a gear pump or a trochoid pump. To the nozzle 19 for regurgitation Delivery, It considered as the configuration which applies the hot melt adhesive 21 fused on the film sheet 20.

**[0003]**

**[Problem(s) to be Solved by the Invention]** However, with the configuration of said conventional hot-melt-adhesive coater, since it was not able to apply flat and smooth if sufficient fluidity is not held until it applies hot melt adhesive 21 to the film sheet 20 with the nozzle 19 for regurgitation, it needed to raise even to the temperature which fuses completely the hot melt adhesive 21 in the square shape melting tank 23, and fully holds a fluidity in the nozzle 19 for regurgitation.

**[0004]** For this reason, the heat deterioration of hot melt adhesive 21 became a technical problem, especially it had the fault that heat deterioration occurred remarkably, in the hot melt adhesive 21 of a polyester system. Moreover, since there was a fin 25 for heating in the configuration of a melting tank by the square shape, hot melt adhesive 21 piled up in the part of a corner, the heat deterioration of the hot melt adhesive 21 which piled up advanced, and carbide had been generated. For this reason, it had the technical problem that it had to clean periodically.

**[0005]** This invention tends to solve such a conventional technical problem, spreading stabilized with the easy configuration can do it, and it aims at moreover offering a hot-melt-adhesive coater with little heat deterioration of hot melt adhesive.

**[0006]**

**[Means for Solving the Problem]** In order to solve said technical problem, the hot-melt-adhesive coater by this invention The feed zone which supplies hot melt adhesive, and the reverse campanulate melting tank which fuses the hot melt adhesive which was equipped with the heating device and supplied from the above-mentioned feed zone, The feeding pump which sends out the hot melt adhesive by which was equipped with the heating device, and was combined with the lower part of the above-mentioned melting tank, and melting was carried out, It consists of a nozzle for regurgitation which carries out the regurgitation of the fused hot melt adhesive which was equipped with the heating device and fed from the above-mentioned feeding pump. Each temperature of a melting tank, a feeding pump, and the fused hot melt adhesive in the interior of each [ of the nozzle for regurgitation ] considers as the configuration which set up the temperature of each heating device so that it might become the relation of the nozzle > feeding pump > melting tank for regurgitation.

**[0007]** Since the melting temperature of the hot melt adhesive in a melting tank is lowered to under

pyrolysis temperature by this this invention, and hot melt adhesive does not pile up, heat deterioration can be reduced and it enables it to apply stable quality.

[0008]

[Embodiment of the Invention] The feed zone to which invention of this invention according to claim 1 supplies hot melt adhesive, The reverse campanulate melting tank which fuses the hot melt adhesive which was equipped with the heating device and supplied from the above-mentioned feed zone, The feeding pump which sends out the hot melt adhesive by which was equipped with the heating device, and was combined with the lower part of the above-mentioned melting tank, and melting was carried out, It considers as the configuration which consists of a nozzle for regurgitation which carries out the regurgitation of the fused hot melt adhesive which was equipped with the heating device and fed from the above-mentioned feeding pump, and has an operation that spreading which prevented the heat deterioration of hot melt adhesive and was stabilized with the easy configuration can be performed.

[0009] In invention according to claim 1, invention according to claim 2 sets up the temperature of each heating device so that each temperature of a melting tank, a feeding pump, and the fused hot melt adhesive in the interior of each [ of the nozzle for regurgitation ] may become the relation of the nozzle > feeding pump > melting tank for regurgitation, it lowers the temperature of the hot melt adhesive in a melting tank in the possible range, and has an operation that the heat deterioration of hot melt adhesive can be prevented.

[0010] Hereafter, it explains, referring to a drawing about the gestalt of 1 operation of this invention. Drawing 1 is the transverse-plane sectional view of the hot-melt-adhesive coater in the gestalt of this operation, the automatic feed zone which has a feed hopper 1 in the end which supplies periodically the hot melt adhesive 13 with which 16 becomes by synthetic-resin material, such as polyester, and a vinyl chloride or vinyl acetate, in this drawing, and 2 are the liquid level sensors of the mechanical cable type, the electric type, or the optical type which detects the oil level of the fused hot melt adhesive 12, and the output-control signal is connected to the mechanical component 3 of the automatic feed zone 16. 4 is a melting tank which fuses hot melt adhesive 13 with storage and heat, and the bottom is carrying out reverse campanulate. 5 is a heater by the electrical and electric equipment by heating oil and the nichrome wire which heat said melting tank 4, electromagnetic, etc., and is arranged in the periphery of the melting tank 4.

[0011] 6 is the feeding pump by which melting was carried out at the heater 5 of the melting tank 4, and which used the gear pump which sends out the fused hot melt adhesive 12, the trochoid pump, etc., and is equipped with the heater 5 and the heater 7 of the same configuration. 8 is the connection section which supplies the fused hot melt adhesive 12 which was sent out with the feeding pump 6 to the nozzle 10 for regurgitation, and is equipped with the heater 5 and the heater 9 of the same configuration. 11 is the heater 5 with which the nozzle 10 for regurgitation was equipped, and the heater of the same configuration. 14 is a film sheet which becomes by polyester, polyimide or polyethylene terephthalate material etc. to which the fused hot melt adhesive 12 is applied, and 15 is applied hot melt adhesive.

[0012] Next, actuation of the hot-melt-adhesive coater of the gestalt of this operation constituted in this way is explained.

[0013] In addition, as hot melt adhesive 13 of the gestalt of this operation, Asahi Chemical polyester system hot melt adhesive "HADIKKU H9410" (melting temperature Tm:135 degree C, viscosity:140 Pa-s at200 degree C) was used.

[0014] First, from the feed hopper 1 of the automatic feeder 16, by the melting tank 4, the hot melt adhesive 13 of non-melting supplied by the drive of a mechanical component 3 is heated by 190 degrees C at the heating heater 5, and is fused. In order that hot melt adhesive 13 may receive heat from a wall surface at the heater 5 of the melting tank 4 at this time, it separates into the hot melt adhesive 12 which the hot melt adhesive 13 of non-melting of a core, the periphery, and the pars basilaris ossis occipitalis fused. Next, the hot melt adhesive 12 which it was heated and was fused is attracted by the lower feeding pump 6 in accordance with the reverse hanging bell configuration of the melting tank 4, as shown in an arrow head.

[0015] And it is sent out to the nozzle 10 for the regurgitation heated by 220 degrees C the same at a heater 11 through the connection section 8 heated by the heater 9 with the feeding pump 6 at 220

degrees C after being heated by 200 degrees C at the heater 6 at which the feeding pump 6 was equipped with the inhaled hot melt adhesive 12 which was fused, and hot melt adhesive 15 is applied to the top face of the film sheet 14 from the bottom point of the nozzle 10 for regurgitation. That is, the hot melt adhesive used being transported is fused hot melt adhesive 12, the hot melt adhesive 13 of non-melting turns into the hot melt adhesive 12 which carried out sequential fusion, and is applied, and goes. It becomes possible for there to be also no heat deterioration and to apply hot melt adhesive 13, without [ therefore ] making melting temperature of the melting tank 4 high, if it does in this way.

[0016] In addition, if it is the conventional method, in "HADIKKU H9410" used with the gestalt of this operation, it is necessary to heat at 230-240 degrees C, it is said that the pyrolysis temperature of "HADIKKU H9410" is 230 degrees C, and it can be said that generating of the heat deterioration by stagnation of hot melt adhesive or carbide will become remarkable.

[0017] Therefore, in order to apply fusing hot melt adhesive 13 continuously according to the gestalt of this operation, the melting tank 4, the feeding pump 6, and the nozzle 10 for regurgitation -- each hot-melt-adhesive temperature By controlling independently the heater which it had above, (The controller section does not illustrate) For example, it is possible to raise gradually with 190 degrees C, 200 degrees C, and 220 degrees C, and to go. It can be set as regular melting temperature, without lowering the temperature of the nozzle 10 for regurgitation which influences most to spreading conditions, and the temperature in the melting tank 4 with the longest melting residence time in contact with the air which affects heat deterioration greatly can be lowered. this -- the heat deterioration of hot melt adhesive 13 -- happening -- being hard -- moreover, since sequential use is carried out from the hot melt adhesive 12 which the fused stagnation of the hot melt adhesive 12 within the melting tank 4 or hot melt adhesive 13 does not have, either, and was fused since the melting tank 4 was carrying out the reverse hanging bell configuration, the advance of heat deterioration or generating of carbide by the holdup will not take place, either.

[0018] In addition, it cannot be overemphasized that the connection section 8 may use heating or an incubation hose depending on the property of the hot melt adhesive to be used, the airtightness in a tank will increase if the automatic closing motion shutter interlocked with the melting tank 4 again at the liquid level sensor 2 is installed, and heat deterioration can be prevented more.

[0019]

[Effect of the Invention] As mentioned above, the hot-melt-adhesive coater by this invention does not have stagnation of hot melt adhesive with an easy configuration, can reduce heat deterioration and becomes possible to apply quality by which hot melt adhesive was stabilized so that clearly also from the gestalt of said operation.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The transverse-plane sectional view of the hot-melt-adhesive coater in the gestalt of 1 operation of this invention

[Drawing 2] The elevation partly in section of the conventional hot-melt-adhesive coater

[Description of Notations]

- 1 Feed Hopper
- 2 Liquid Level Sensor
- 3 Mechanical Component
- 4 Melting Tank
- 5 Heater
- 6 Feeding Pump
- 7 Heater
- 8 Connection Section
- 9 Heater
- 10 Nozzle for Regurgitation
- 11 Heater
- 12 Fused Hot Melt Adhesive
- 13 Hot Melt Adhesive
- 14 Film Sheet
- 15 Hot Melt Adhesive
- 16 Automatic Feed Zone

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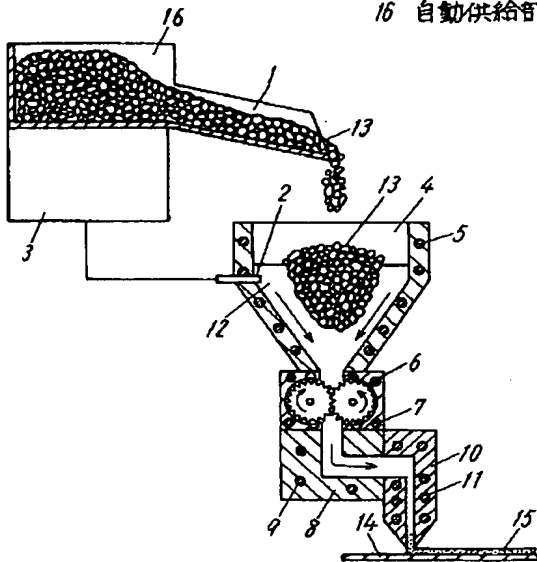
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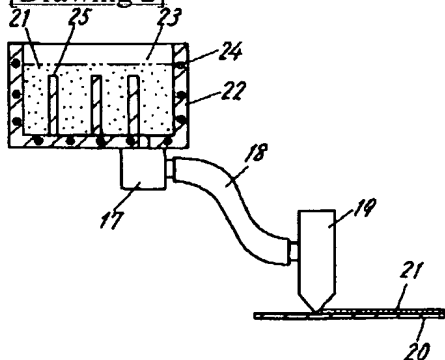
## DRAWINGS

[Drawing 1]

- |                     |                      |
|---------------------|----------------------|
| 2 液面センサ             | 6 圧送ポンプ              |
| 3 駆動部               | 8 連結部                |
| 4 溶融タンク             | 10 吐出用ノズル            |
| 5, 7, 9, 11<br>ヒーター | 12 溶融した<br>ホットメルト接着剤 |
|                     | 13 ホットメルト接着剤         |
|                     | 14 フィルムシート           |
|                     | 16 自動供給部             |



[Drawing 2]



[Translation done.]